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AS

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/287,602 04/07/99 KIM

D 5480-00200

IM22/0322

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EXAMINER

VARCOE JR, F

ART UNIT

PAPER NUMBER

1764

DATE MAILED:

03/22/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/287,602

Applicant(s)

Kim

Examiner

Varcoe

Group Art Unit

1764



☒ Responsive to communication(s) filed on Jan 8, 2001

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 1-21 is/are pending in the application

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-21 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Response to Amendment

1. In response to the amendment the objections to the drawings and the specifications have been withdrawn. The 35 U.S.C. §112 rejections have also been withdrawn.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 6 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specification does not explain the manner of delivery of conditioned gas that causes the gas delivered from the combustion chamber to avoid directly contacting a substantial portion of the cooler gas. This topic seems to be addressed on page 12 of the specification, lines 1-4. The specification states that air or nitrogen is supplied to the plate material (61a) of the guide plate 61. It is not clear what this means. What does it mean to supply gas to a material? And how does supplying gas to a material prevent a high temperature gas from contacting a low temperature gas? One could imagine that the conditioned gas is delivered to the plate in a manner that creates a layer of conditioned gas on top of the plate that then prevents the

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downwardly flowing hot gas from actually touching the cooler plate, thereby avoiding cooling the gas on the plate and avoiding generating powder that would result from the cooling. But neither the specification nor the claim states or implies this. It remains unclear where the hot and cold gas mixing might occur and how the gas from nozzle 62 prevents this mixing.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 2, 6 and 7 - 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 2, claim 1 defines “the gas” is defined as gas directed from the combustion chamber into the wetting chamber (line 5). But claim 2 recites “adapted to burn flammable elements of the gas.” If “the gas” is the gas that has already left the combustion chamber presumably never to return, it is not clear how the combustion chamber can then burn flammable components of that gas.

With regard to claim 6, in line 2, and claim 14 line 4, “high” is a relative term and therefore not clear.

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With regard to claim 7, it is not clear what is meant by :said means for minimizing is conducted during...” In an apparatus claim, means is generally a structural element. it is not clear what it means to conduct a structural element. Conducting is usually associated with processes rather than structure. Perhaps “operated” would be better, since apparatus is “operated” rather than “conducted.”

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 1-3, 5-8, 14, 15 and 18-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartung et al., U.S. Patent No. 5,900,217.

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With regard to claim 1, Hartung discloses a gas scrubber comprising a combustion chamber (Figure 1 (6)). Hartung discloses a wetting chamber (7).

Hartung discloses a guide plate (16) arranged between the combustion chamber and the wetting chamber for directing a gas from the combustion chamber into the wetting chamber.

Hartung discloses an injection nozzle (19) having an opening adapted to deliver a conditioned gas above the guide plate for minimizing the production and/or accumulation of a powder at an interface between the combustion chamber and the wetting chamber.

Hartung fails to disclose placing the wetting chamber below the combustion chamber.

At the time of the invention it would have been obvious to one skilled in the art to place the wetting chamber below the combustion chamber. Positioning the parts of the apparatus is no more than a design choice, well within the knowledge of one skilled in the art.

The motivation would have been to prevent the solution containing the absorbed material from being heated by a combustion chamber below it.

Operating the injection nozzle during operation of the scrubber is a mode of operation and not a structural feature of the apparatus.

With regard to claim 2, Hartung discloses a combustion chamber adapted to burn flammable elements of the gas (Abstract).

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With regard to claim 3, Hartung discloses a wetting chamber adapted to receive water (Figure 1).

With regard to claim 5, Hartung discloses a plurality of water drenched absorbers (7) across which the gas is directed. Although only one such absorber is disclosed in Figure 1, it would have been obvious to multiply these absorbers. Mere duplication of parts has no patentable significance unless new and unexpected results are produced. In re Harza, 124 U.S.P.Q. 378 (C.C.P.A. 1960).

Hartung discloses an exhaust pipe (20) having an opening extending into the wetting chamber for receiving the directed gas after the gas is passed across at least a portion of the water drenched plurality of absorbers.

With regard to claim 6, the modified apparatus of Hartung includes a combustion chamber (Figure 1 (6)), a water absorber (7), and a guide plate (16). The temperatures and gas contact are operating conditions and do not patentably distinguish the apparatus from the prior art.

With regard to claim 7, Hartung discloses a gas scrubber comprising a combustion chamber (6) for eliminating explosive and flammable elements contained in a gas delivered into the combustion chamber from a gas intake.

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Hartung discloses a wetting chamber (7) to receive the gas from the combustion chamber and dissolve a water soluble element of the gas.

Hartung discloses a means (19) for minimizing a powder produced due to a temperature difference between the combustion chamber and the wetting chamber at an interface between the combustion chamber and the wetting chamber. When the means for minimizing a powder is operated is part of a mode of operation and not a structural feature of the apparatus.

With regard to claim 8, Hartung discloses a gas scrubber wherein the combustion chamber comprises a case (2) connected to receive the gas intake (Figure 1) and an air intake (Figure 1) and a heating means (Figure 1, burner (12)) placed inside the case for applying heat to the gas flowing into the case from the gas intake.

With regard to claim 14, the use of cooling jackets to cool flowing fluids is well-known in the art.

With regard to claim 15, Hartung discloses a case with a partition (16) that forms a passage through the case from the combustion chamber. Hartung also discloses an absorber (7) at least partially drenched by water, a shower nozzle (18) and an exhaust pipe (20).

While Hartung discloses only one such absorber, it would have been obvious to one skilled in the art to multiply these absorbers, since mere duplication of parts has no patentable

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significance unless new and unexpected results are produced. In re Harza, 124 U.S.P.Q. 378 (C.C.P.A. 1960).

With regard to claim 18, it is not clear how this portion of the apparatus works. Nevertheless it would be obvious to maintain a particular pressure by means of sensors and valves.

With regard to claim 19, Hartung discloses means (21) for viewing the interior of the apparatus. It would have been obvious to use a window for that purpose as well.

With regard to claim 20, it is well-known in the art to coat surfaces subject to chemical reaction with PTFE (Teflon) to prevent such reactions.

With regard to claim 21, Hartung discloses a guide plate (16) configured to guide the gas from the combustion chamber to the wetting chamber. Hartung also discloses an injection nozzle 919) to inject air or nitrogen above the guide plate for removing powder from the guide plate. It is not clear what is meant by “two plate materials.” The square funnel-shaped configuration is an obvious design choice and therefore within the knowledge and abilities of one skilled in the art.

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8. Claims 4, 9-13, 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartung et al., U.S. Patent No. 5,900,217 in view of Kim, Korean Patent Publication 97-93111 published June 10, 1997, English translation supplied..

With regard to claim 4, Hartung discloses a wetting chamber comprising an angled bottom surface (3) and a water expulsion nozzle (19).

Kim discloses a drain valve and a water nozzle having an opening directed to the angled bottom for flushing the particulates into a drain which opens into the wetting chamber.

Hartung and Kim are analogous art in that both deal with purifying a waste gas from a semiconductor manufacturing facility.

At the time of the invention it would have been obvious to one skilled in the art to combine the drain and nozzle configuration of Kim with the apparatus of Hartung.

The motivation would have been to prevent sludge buildup in the bottom of the wet chamber (Kim page 4 lines 1-3)

With regard to claim 9, Hartung discloses a heating means including a heat chamber (Figure 1).

Hartung fails to disclose multiple heat exchange units. It would have been obvious to one skilled in the art to add additional heat exchange units, since mere duplication of parts has no

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patentable significance unless new and unexpected results are produced. In re Harza, 124 U.S.P.Q. 378 (C.C.P.A. 1960).

Hartung fails expressly to disclose using electrical heating elements.

Kim discloses electrical heating elements (page 3 line 22; page 5 line 18).

Kim and Hartung are analogous in that both deal with purifying waste gases from semiconductor manufacturing.

At the time of the invention it would have been obvious to one skilled in the art to use multiple electrical heating units, as well as placing the heating element inside a ceramic casing. This use of ceramics is well-known in the art.

The motivation would have been greater temperature control.

Hartung discloses a pair of cleaning nozzles (19) installed on both upper sides of the heater chamber.

Thus it would have been obvious to combine the apparatus of Kim with the apparatus of Hartung to get the invention of the instant claim.

With regard to claim 10, it would have been obvious to modify the modified apparatus of Hartung by placing an insulator with an electric heater to prevent an electrical short circuit.

With regard to claim 11, Kim discloses Inconel for use as a heater housing (page 3 line 21).

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At the time of the invention it would have been obvious to one skilled in the art to use Inconel for a heater housing in Hartung's apparatus.

The motivation would have been to take advantage of Inconel's heat resistance in order to withstand high temperature (Kim page 5 lines 14-16).

With regard to claim 12, it would have been obvious to one skilled in the art to protect electrical connections located in a corrosive atmosphere by replacing the atmosphere with one that is noncorrosive.

With regard to claim 13, the manner of connecting and operating the heating units would have been obvious to one skilled in the art. No unexpected effect has been shown to result from this obvious attempt to maintain a fixed amount of heating in the apparatus, regardless of the number of heaters employed.

With regard to claims 16 and 17, Hartung discloses a gas scrubber with a v-shaped bottom (3). Kim discloses a sensor that monitors the water level and initiates a water nozzle to inject water to push the sludge out.

At the time of the invention it would have been obvious to one skilled in the art to combine the sensor and nozzle of Kim with the v-shaped drain of Hartung

The motivation would have been to automatically remove sludge (Kim page 10 lines 2-6).

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Response to Arguments

9. Applicant's arguments filed January 8, 2001, have been fully considered but they are not persuasive. Applicant argues that none of the cited art suggests means for minimizing production or accumulation of powder at the interface between the combustion chamber and the wetting chamber. While powder buildup is not expressly mentioned, the structural features of the prior art supply the means for minimizing production and minimizing accumulation of any powder that might form. Fluid coming from nozzles can be used to remove solids buildup. Applicant also points out that Hartung describes use of the nozzle ring during pauses in operation. Hartung's comments do not exclude the possibility of using the nozzle ring while the gas scrubber is in operation as well. Applicant points out that Hartung's nozzle ring only cleans the inside of pipe (16) and not the interface between the combustion chamber and the wetting chamber. The interface between the combustion space and the wetting chamber is at the end of the inner pipe (16). Since the nozzle ring cleans pipe (16) it must therefore also clean that portion of the pipe that is at the interface as well, thereby cleaning the interface itself.

With regard to claim 9, Applicant points out that the present claim recites heat exchange units in a pattern of rows, while Kim's heat exchange units are in a v-shaped pattern. Since a v-shape contains at least two rows, and since the present claim does not further explain the pattern of rows intended, the present claim is not seen to distinguish over Kim.

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Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick Varcoe, whose telephone number is (703) 306-5477. The examiner can normally be reached Monday through Friday from 9:00 am to 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode, can be reached on (703) 308-4311.

The FAX telephone number for this Group Art Unit is (703) 305-3599 (for Official papers after Final), (703) 305-5408 (for other Official papers) and (703) 305-6357 (for Unofficial papers).

When filing a FAX in Group 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of the application. This will expedite processing your papers.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

RV
March 18, 2001


MARIAN C. KNODE
SUPERVISORY PATENT EXAMINER
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